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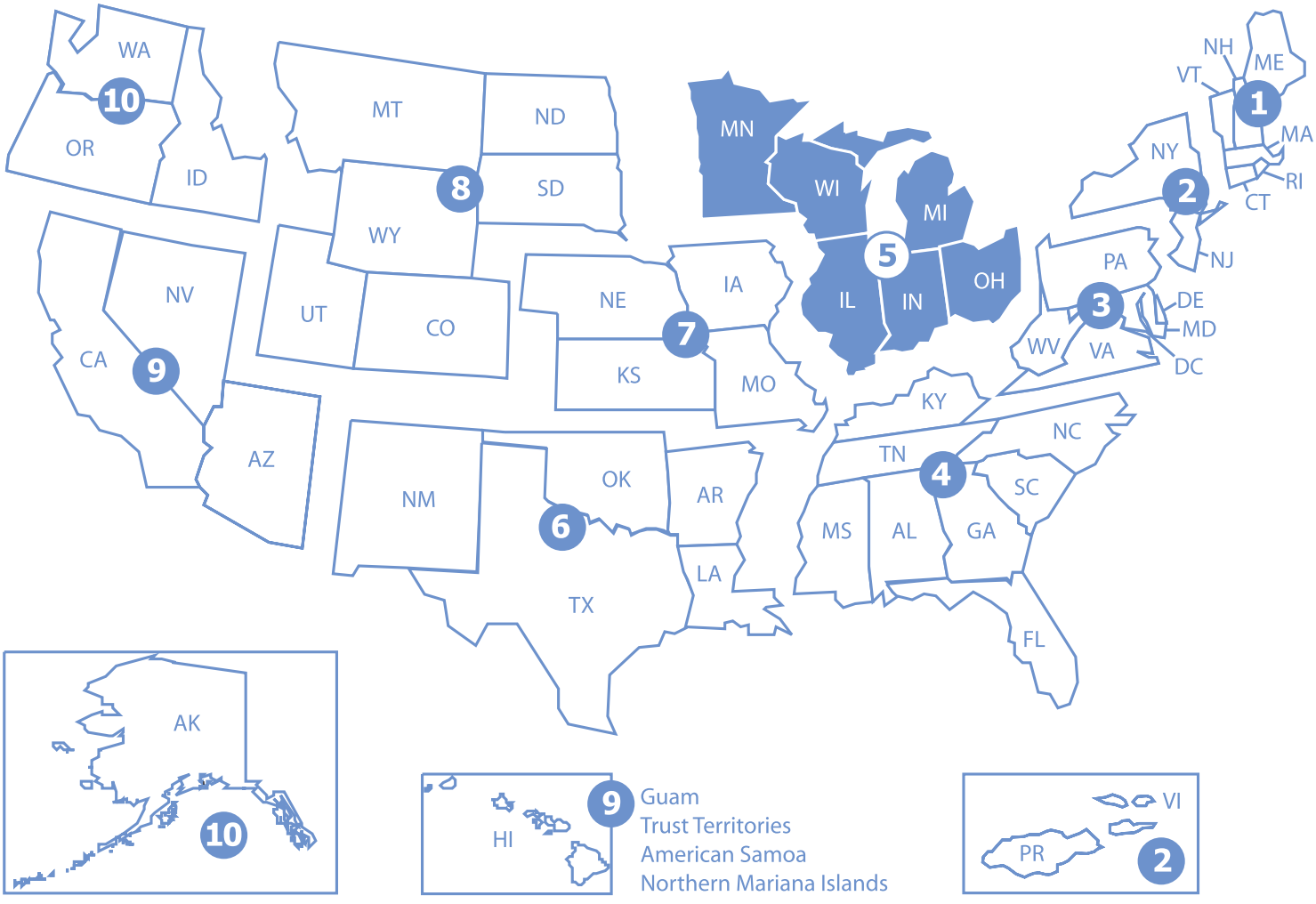
Office of Solid Waste and Emergency Response

Support Document for the Revised National Priorities List Final Rule – Lake Calumet Cluster



Support Document for the Revised National Priorities List Final Rule Lake Calumet Cluster

March 2010

Site Assessment and Remedy Decisions Branch
Office of Superfund Remediation and Technology Innovation
Office of Solid Waste and Emergency Response
U.S. Environmental Protection Agency
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Executive Summary

Section 105(a)(8)(B) of CERCLA, as amended by SARA, requires that the EPA prepare a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. An original National Priorities List (NPL) was promulgated on September 8, 1983 (48 FR 40658). CERCLA requires that EPA update the list at least annually.

This document provides responses to public comments received on the Lake Calumet Cluster site, proposed on September 14, 2005 (70 FR 54327). This site is being added to the NPL based on an evaluation under EPA's Hazard Ranking System (HRS) in a final rule published in the *Federal Register* in March 2010.

Introduction

This document explains the rationale for adding the Lake Calumet Cluster site in Chicago, Illinois, to the National Priorities List (NPL) of uncontrolled hazardous waste sites and provides responses to public comments received on this site listing proposal. The EPA proposed this site to the NPL on September 14, 2005 (70 FR 54327). This site is being added to the NPL based on an evaluation under the Hazard Ranking System (HRS) in a final rule published in the *Federal Register* in March 2010.

Background of the NPL

In 1980, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. Sections 9601 *et seq*. in response to the dangers of uncontrolled hazardous waste sites. CERCLA was amended on October 17, 1986, by the Superfund Amendments and Reauthorization Act (SARA), Public Law No. 99-499, stat., 1613 *et seq.* To implement CERCLA, EPA promulgated the revised National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300, on July 16, 1982 (47 FR 31180), pursuant to CERCLA Section 105 and Executive Order 12316 (46 FR 42237, August 20, 1981). The NCP, further revised by EPA on September 16, 1985 (50 FR 37624) and November 20, 1985 (50 FR 47912), sets forth guidelines and procedures needed to respond under CERCLA to releases and threatened releases of hazardous substances, pollutants, or contaminants. On March 8, 1990 (55 FR 8666), EPA further revised the NCP in response to SARA.

Section 105(a)(8)(A) of CERCLA, as amended by SARA, requires that the NCP include

> criteria for determining priorities among releases or threatened releases throughout the United States for the purpose of taking remedial action and, to the extent practicable, take into account the potential urgency of such action, for the purpose of taking removal action.

Removal action involves cleanup or other actions that are taken in response to emergency conditions or on a short-term or temporary basis (CERCLA Section 101). Remedial action is generally long-term in nature and involves response actions that are consistent with a permanent remedy for a release (CERCLA Section 101). Criteria for placing sites on the NPL, which makes them eligible for remedial actions financed by the Trust Fund established under CERCLA, were included in the HRS. EPA promulgated the HRS as Appendix A of the NCP (47 FR 31219, July 16, 1982). On December 14, 1990 (56 FR 51532), EPA promulgated revisions to the HRS in response to SARA, and established the effective date for the HRS revisions as March 15, 1991.

Section 105(a)(8)(B) of CERCLA, as amended, requires that the statutory criteria provided by the HRS be used to prepare a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. The list, which is Appendix B of the NCP, is the NPL.

An original NPL of 406 sites was promulgated on September 8, 1983 (48 FR 40658). At that time, an HRS score of 28.5 was established as the cutoff for listing because it yielded an initial NPL of at least 400 sites, as suggested by CERCLA. The NPL has been expanded several times since then, most recently on November 4, 2009 (74 FR 57085). The Agency also has published a number of proposed rulemakings to add sites to the NPL. The most recent proposal was on September 23, 2009 (74 FR 48504).

Development of the NPL

The primary purpose of the NPL is stated in the legislative history of CERCLA (Report of the Committee on

Environment and Public Works, Senate Report No. 96-848, 96th Cong., 2d Sess. 60 [1980]).

> The priority list serves primarily informational purposes, identifying for the States and the public those facilities and sites or other releases which appear to warrant remedial actions. Inclusion of a facility or site on the list does not in itself reflect a judgment of the activities of its owner or operator, it does not require those persons to undertake any action, nor does it assign liability to any person. Subsequent government actions will be necessary in order to do so, and these actions will be attended by all appropriate procedural safeguards.

The NPL, therefore, is primarily an informational and management tool. The identification of a site for the NPL is intended primarily to guide EPA in determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with the site and to determine what CERCLA-financed remedial action(s), if any, may be appropriate. The NPL also serves to notify the public of sites EPA believes warrant further investigation. Finally, listing a site may, to the extent potentially responsible parties are identifiable at the time of listing, serve as notice to such parties that the Agency may initiate CERCLA-financed remedial action.

CERCLA Section 105(a)(8)(B) directs EPA to list priority sites among the known releases or threatened release of hazardous substances, pollutants, or contaminants, and Section 105(a)(8)(A) directs EPA to consider certain enumerated and other appropriate factors in doing so. Thus, as a matter of policy, EPA has the discretion not to use CERCLA to respond to certain types of releases. Where other authorities exist, placing sites on the NPL for possible remedial action under CERCLA may not be appropriate. Therefore, EPA has chosen not to place certain types of sites on the NPL even though CERCLA does not exclude such action. If, however, the Agency later determines that sites not listed as a matter of policy are not being properly responded to, the Agency may consider placing them on the NPL.

Hazard Ranking System

The HRS is the principle mechanism EPA uses to place uncontrolled waste sites on the NPL. It is a numerically based screening system that uses information from initial, limited investigations -- the preliminary assessment and site inspection -- to assess the relative potential of sites to pose a threat to human health or the environment. HRS scores, however, do not determine the sequence in which EPA funds remedial response actions, because the information collected to develop HRS scores is not sufficient in itself to determine either the extent of contamination or the appropriate response for a particular site. Moreover, the sites with the highest scores do not necessarily come to the Agency's attention first, so that addressing sites strictly on the basis of ranking would in some cases require stopping work at sites where it was already underway. Thus, EPA relies on further, more detailed studies in the remedial investigation/feasibility study that typically follows listing.

The HRS uses a structured value analysis approach to scoring sites. This approach assigns numerical values to factors that relate to or indicate risk, based on conditions at the site. The factors are grouped into three categories. Each category has a maximum value. The categories are:

- likelihood that a site has released or has the potential to release hazardous substances into the environment;
- characteristics of the waste (toxicity and waste quantity); and
- people or sensitive environments (targets) affected by the release.

Under the HRS, four pathways can be scored for one or more threats as identified below:

- Ground Water Migration (S_{gw})
  - drinking water

- Surface Water Migration (S_{sw})
  The following threats are evaluated for two separate migration components, overland/flood migration and ground water to surface water.
  - drinking water
  - human food chain
  - sensitive environments

- Soil Exposure (S_s)
  - resident population
  - nearby population
  - sensitive environments

- Air Migration (S_a)
  - population
  - sensitive environments

After scores are calculated for one or more pathways according to prescribed guidelines, they are combined using the following root-mean-square equation to determine the overall site score (S), which ranges from 0 to 100**:**

$$S = \sqrt{\frac{S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2}{4}}$$

If all pathway scores are low, the HRS score is low. However, the HRS score can be relatively high even if only one pathway score is high. This is an important requirement for HRS scoring because some extremely dangerous sites pose threats through only one pathway. For example, buried leaking drums of hazardous substances can contaminate drinking water wells, but -- if the drums are buried deep enough and the substances not very volatile -- not surface water or air.

Other Mechanisms for Listing

There are two mechanisms other than the HRS by which sites can be placed on the NPL. The first of these mechanisms, authorized by the NCP at 40 CFR 300.425(c)(2), allows each State and Territory to designate one site as its highest priority regardless of score. The last mechanism, authorized by the NCP at 40 CFR 300.425(c)(3), allows listing a site if it meets the following three requirements:

- Agency for Toxic Substances and Disease Registry (ATSDR) of the U.S. Public Health Service has issued a health advisory that recommends dissociation of individuals from the release;
- EPA determines the site poses a significant threat to public health; and
- EPA anticipates it will be more cost-effective to use its remedial authority than to use its emergency removal authority to respond to the site.
-

Organization of this Document

The following section contains EPA responses to site-specific public comments received on the proposal of the Lake Calumet Cluster site on September 14, 2005 (70 FR 54327). The site discussion begins with a list of commenters, followed by a site description, a summary of comments, and Agency responses to each comment. A concluding statement indicates the effect of the comments on the HRS score for the site.

Glossary

The following acronyms and abbreviations are used throughout the text:

AALAC	Ambient Aquatic Life Advisory Concentrations
Agency	U.S. Environmental Protection Agency
ATSDR	Agency for Toxic Substances and Disease Registry
AWQC	Ambient Water Quality Criteria
BCF	Bioconcentration factor
CAIC	Calumet Area Industrial Commission
CDOE	City of Chicago Department of Environment
CEPA	Calumet Ecological Park Association
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. Sections 9601 *et seq*., also known as Superfund
CFR	Code of Federal Regulations
CLP	EPA Contract Laboratory Program
CRDL	Contract-required detection limit
CRQL	Contract-required quantitation limit
DL	Detection limit
ECOTOX	The U.S. EPA ECOTOXicology database
EPA	U.S. Environmental Protection Agency
FR	Federal Register
FS	Feasibility study
HRS	Hazard Ranking System, Appendix A of the NCP
HRS score	Overall site score calculated using the Hazard Ranking System; ranges from 0 to 100
IEPA	Illinois Environmental Protection Agency, also known as Illinois EPA
LCC	Lake Calumet Cluster
LCCG	Lake Calumet Cluster Site Group
LCCS	Lake Calumet Cluster Site
logK_{ow}	Logarithm of the n-octanol-water partition coefficient

MCL	Maximum contaminant level
µg/kg	Microgram per kilogram
NCP	National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300
NPL	National Priorities List, Appendix B of the NCP
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PPE	Probable point of entry
PRP	Potentially responsible party
RI	Remedial investigation
SARA	Superfund Amendments and Reauthorization Act
SCDM	Superfund Chemical Data Matrix
SVOC	Semi-volatile organic compounds
SETF	Southeast Environmental Task Force
SOW	Statement of work
SQL	Sample quantitation limit
TDL	Target distance limit
VOC	Volatile organic compounds

1.0 List of Commenters and Correspondence

EPA-HQ-SFUND-2005-0005-0006	Correspondence dated September 7, 2005, from Rod R. Blagojevich, Governor of the State of Illinois.
EPA-HQ-SFUND-2005-0005-0018	Correspondence dated October 14, 2005, from Saul A. Johnson, Commissioner, City of Chicago Department of Environment (CDOE).
EPA-HQ-SFUND-2005-0005-0019	Comment, not dated, received from an anonymous commenter.
EPA-HQ-SFUND-2005-0005-0020	Comment dated November 11, 2005, from Leo M. Brausch, Consulting Environmental Engineer, Technical Project Manager, Lake Calumet Cluster Site Group.
EPA-HQ-SFUND-2005-0005-0022	Comment dated November 14, 2005, from Keith Harley of the Chicago Legal Clinic on behalf of the Calumet Ecological Park Association (CEPA) and the Southeast Environmental Task Force (SETF).
EPA-HQ-SFUND-2005-0005-0024	Comment dated November 14, 2005, from the Calumet Area Industrial Commission (CAIC).

2.0 Site Description

The Lake Calumet Cluster site (site) is located within the Calumet region of southeast Chicago, Illinois. Surface and subsurface soils throughout the site, as well as sediment and water samples from the Indian Ridge Marsh to the east, demonstrate the presence of elevated concentrations of inorganics, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and polychlorinated biphenyls (PCBs).

Although a variety of operations occurred at the Lake Calumet Cluster site, the contaminants discovered in surface and subsurface samples throughout the site are similar, have either commingled or are contiguous, and cannot be associated with one specific operation that occurred at the site; therefore, they are considered to be part of a single, overall site source. This source is composed of a group of contiguous areas previously utilized as a former incinerator (the Alburn Inc. property), a drum storage facility (the U.S. Drum property), an undocumented waste disposal area (the Unnamed Parcel), and hazardous waste lagoons (the Paxton Avenue Lagoons), located on top of a previously operated landfill approximately 87 acres in size (see Attachment 1 to this support document). These areas are located in the middle of an ecologically rich area and have been previously investigated separately under state programs and the Superfund program. Time-critical removal actions have previously been undertaken on some of these properties by both the U.S. EPA and the Illinois EPA. However, significant surface and subsurface contamination remains within these areas and continues to pose a threat to public health and the environment.

The land surface at the site was originally a large wetland and has been altered due to on-site operations and response actions but, in general, is relatively flat. Due to the presence of relatively impervious slag materials throughout the site, some precipitation collects in low areas on the site or runs off into on-site ditches. These ditches, in turn, discharge in part through culverts north of the site to Indian Ridge Marsh

to the east. Several species of state-designated endangered and threatened species are known to occur in the vicinity of the site, including in the marsh.

Since the site was proposed to be listed on the NPL in September 2005, the Illinois EPA has undertaken actions to remove waste, performed a remedial design, and started the installation of a cap to contain the migration of hazardous substances from Lake Calumet Cluster. To date, work completed on the cap includes the installation of a gas collection layer, gas collection piping, and a grading layer. Work that is planned as part of a complete cap includes finishing the gas collection layer to make it operational, reworking the grading layer and, installing at least 7 more layers, including a low-permeability clay layer.

3.0 Summary of Comments

Four commenters, Governor Blagojevich of Illinois, the City of Chicago Department of Environment, Mr. Keith Harley on behalf of the Calumet Ecological Park Association and the Southeast Environmental Task Force, and the Calumet Area Industrial Commission wrote in favor of placing the Lake Calumet Cluster site on the National Priorities List (NPL). One commenter, Mr. Leo Brausch, on behalf of the Lake Calumet Cluster Sites Group (hereafter referred to as LCCG), wrote in opposition to the listing. LCCG commented that it objected to the "cluster" approach to delineating the site, that the site poses little human health or environmental risk, and that the HRS analysis is inaccurate. LCCG concluded that if the Hazard Ranking System score were "correctly assessed," the site would not qualify for NPL listing. LCCG requested that its comments be considered significant and be addressed if EPA proceeds with listing the site.

An anonymous commenter requested that EPA delay the listing because of a Supreme Court decision, *Cooper Industries v. Aviall Services*, 543 U.S. 157, 125 S.Ct. 577 (2004).

In this support document, EPA responds to comments submitted on the September 2005 proposed listing of the Lake Calumet Cluster site. After consideration of these items, the HRS site score remains unchanged and EPA is appropriately placing the site on the NPL.

3.1 Delay Listing

Comment: An anonymous commenter stated that the listing should be delayed because the Supreme Court decision precipitated a substantial change in the understanding of the statutory workings of CERCLA. The commenter stated:

> The issue presented in the *Cooper Industries* case was whether "a private party who has not been sued under §106 or §107(a) may nevertheless obtain contribution under §113(f)(1) from other liable parties." 125 S.Ct. at 580. The Supreme Court ruled that the only circumstances in which a contribution claim could be brought under this provision were "during or following" a civil action under §106 or §107(a).
>
> While the Supreme Court's decision in *Cooper Industries* was a fairly straightforward interpretation of statutory language, it precipitated a substantial change in the understanding of the statutory workings of CERCLA. Several questions were expressly left unanswered in the *Cooper Industries* decision including the question of whether an order issued by EPA under §106(a) would constitute a "civil action." The Supreme Court also declined to address the question of whether a PRP who has been named as a defendant in a civil action under §106 or §107 may recover response costs in a "cost recovery" action under §107(a)(4)(B). These two questions and others have resulted in

> decisions from lower federal courts that leave the previously understood contribution mechanisms of CERCLA in a confused and conflicting state.

The commenter concluded that with respect to the proposed listing, the agency should delay listing the site, retaining its option for listing in the future, "while awaiting a clarification of the post *Cooper Industries* case law with respect to contribution, an integrally important component of CERCLA."

Response: The act of placing a site on the NPL does not establish or reflect a decision on whether any party may be liable for response costs, nor is liability considered when evaluating a site under the HRS. Liability and cost issues are not relevant to the HRS scoring of sites which is the basis for the NPL listing of the Lake Calumet Cluster site. Therefore, any decision by the Court addressing cost and liability issues is rightfully not considered at this stage of the listing process. See section 3.5, *Liability*, of this support document for further discussion of this issue.

3.2 Support for Listing

Four commenters, Governor Blagojevich of Illinois, the City of Chicago Department of the Environment, Mr. Keith Harley on behalf of the Calumet Ecological Park Association and the Southeast Environmental Task Force, and the Calumet Area Industrial Commission wrote in favor of placing the Lake Calumet Cluster site on the NPL.

3.2.1 General Support for Listing

Comment: At the time this site was proposed for the NPL, Governor Blagojevich wrote in support of placing this site on the NPL, stating that past disposal and operating practices at the Lake Calumet Cluster site have resulted in uncontrolled releases of hazardous substances to the environment that pose unacceptable risks to human health and the environment. The state has reiterated its support for placing this site on the NPL in a letter dated February 16, 2010, written by Gary P. King, Acting Chief, Bureau of Land, Illinois EPA. The City of Chicago Department of Environment (CDOE) requested to remain involved as the investigation and remediation proceed.

Mr. Keith Harley of the Chicago Legal Clinic, on behalf of the Calumet Ecological Park Association (CEPA) and the Southeast Environmental Task Force (SETF), wrote in favor of the listing. He also commented that listing will enable an assessment of natural resource damages, although he also observed that there are no viable owners/operators and that most parcels comprising the site are tax delinquent. In addition, after noting the extent of local and regional involvement with the site, Mr. Harley stated that, "[i]f there are alternatives to NPL listing and the application of CERCLA's resources and remedies to the Calumet Cluster, they have not been successfully articulated despite nine years of opportunity."

Response: The Agency has added Lake Calumet Cluster site to the NPL. Listing makes a site eligible for remedial action funding under CERCLA, and EPA will examine the site to determine the appropriate response action(s). Actual funding may not necessarily be undertaken in the precise order of HRS scores, however, and upon more detailed investigation may not be necessary at all in some cases. EPA will determine the need for using Superfund monies for remedial activities on a site-by-site basis, taking into account the NPL ranking, State priorities, further site investigation, other response alternatives, and other factors as appropriate.

Regarding the assessment of natural resource damages, trustees for injured or lost natural resources can undertake a natural resource damage assessment (40 CFR 300.615(c)(1)(iii)). While the loss of natural resources was not factored into the HRS scoring for this site, the HRS evaluation of the surface water

pathway did evaluate the environmental threat component of this pathway. An observed release of hazardous substances to Indian Ridge Marsh, a wetland, at the site was also documented.

3.2.2 Evaluation of Other Possible Threats

Comment: Mr. Keith Harley of the Chicago Legal Clinic, on behalf of the Calumet Ecological Park Association (CEPA) and the Southeast Environmental Task Force (SETF), wrote in favor of the listing. Mr. Harley expressed the opinion that the risk of the site is understated in the HRS documentation record at proposal because of risk pathways not addressed, notably releases of gas and particulate contaminants, and contaminated ground water, leachate, and runoff, resulting in contamination of nearby residential and recreational area air, soils and surface waters fished for human consumption.

Mr. Harley stated:

> The surface of the Calumet Cluster contains hundreds of thousands of cubic yards of contaminated material. There is nothing in place at the Cluster to prevent this material from being released into the ambient air as gas or as particulate matter. In turn, there is nothing to prevent these contaminants from being transported by the wind into nearby, densely populated residential areas where they are available for inhalation or ingestion. Because there is fishing in immediately adjacent waterways (without any advisory or prohibition), often for subsistence purposes, there is potential for ingestion of contaminants that originate in the Cluster and are transported off-site by groundwater, leachate and runoff.

Mr. Harley added that it is striking that the Lake Calumet Cluster scores high enough to justify listing even though the hazards posed by the site to human health have not been evaluated in the scoring package.

Response: While the Agency agrees that while there are other contaminant migration and exposure routes and potentially many more human and sensitive environments threatened by the releases from this site, the listing decision is justified based on the information contained in the HRS documentation record at proposal. The listing decision is not affected by this comment. To have investigated all the possible pathways and targets would have required considerable additional time and resources, which are more appropriately expended during other stages of the Superfund process.

The HRS does not require scoring all pathways or targets if scoring those pathways or targets does not change the listing decision. For some sites, data for scoring a pathway are unavailable, and obtaining these data would be time-consuming or costly. In other cases, data for scoring some targets, threats, or pathways are available, but will only have a minimal effect on the site score. In still other cases, data on other pathways could substantially add to a site score, but would not affect the listing decision.

The HRS is a screening tool that uses limited resources to determine whether a site should be placed on the NPL for possible Superfund response. A separate stage of the Superfund process characterizes conditions and hazards at the site more comprehensively.

To the extent practicable, EPA attempts to score all targets, threats, or pathways that pose significant threats. If the contribution of a pathway or target is minimal to the overall score, in general, that pathway or target will not be scored. In these cases, the HRS documentation record may include a brief qualitative discussion to present a more complete picture of the conditions and hazards at the site. As a matter of policy, EPA generally does not delay listing a site to incorporate new data or score new pathways if the listing decision is not affected.

At this site, the surface water migration pathway was evaluated and received a score of 60.00, which provided an overall HRS score of 30.00, above the minimum score of 28.50 that, as matter of policy, EPA uses as the cutoff for listing a site on the NPL. EPA is aware that exposure pathways other than those scored in the HRS documentation record at proposal exist at the site. Ground water contamination and threats to aquatic human food chain organisms are specifically identified in the HRS documentation record at proposal (see pages 24 and 25 of the HRS documentation record at proposal). The Agency will take these threats into consideration in determining what course of action is most appropriate. The evaluation of additional pathways or threats would only increase the overall site score. It would not change the decision to list the site. Further discussion of risk posed by the site is presented in section 3.5 of this support document.

3.3 Impact of Listing

Comment: The Calumet Area Industrial Commission (CAIC) expressed reservations about the proposal because it feared the listing might hamper its efforts to retain and expand the industrial base in the Calumet area, but endorsed the listing as a route to final remediation and closure of the site. CAIC added that it is concerned that due to limited availability of funding, listing the site does not mean a timely action will be taken. It also expressed that it is CAIC's understanding that once the site is closed, the site will not pose a threat to human health and safety and will not be utilized for future economic or leisure purposes.

Response: Regarding CAIC's concerns about the impacts of listing the site on local business development, EPA recognizes that there are both costs and benefits that can be associated with listing a site on the NPL. Among the potential benefits associated with listing a site on the NPL are increased protection to human health and the environment as a result of increased public awareness of potential hazards, and a potential comprehensive cleanup that alleviates any risks or threats posed by the contamination at the site. Therefore, it is possible that any perceived or actual negative fluctuations in property values or development opportunities that may result from contamination may be countered by positive fluctuations when a CERCLA investigation and any necessary cleanup are completed. Furthermore, adding the site to the NPL will allow Superfund financing for the remedial action. However, the actual order of the allocation of Superfund monies will be determined on a site-by-site basis. EPA notes that the public will be informed on decisions and activities pertaining to the site as part of the Agency's Community Relations Plan.

With regard to future use of the Lake Calumet Cluster site, as part of the Superfund Redevelopment Initiative, EPA has granted the City of Chicago Department of Environment (CDOE) funds to promote reuse of the Lake Calumet Cluster site. CDOE has funded activities to promote reuse of the site. There was an existing conservation-type reuse plan for the entire area under which CDOE considered the Lake Calumet Cluster site. CDOE updated the regional conservation plan adding Lake Calumet Cluster. They did title work to see who owned each parcel, paid a consultant to study the surface flow off the site, and incorporated surface flow into the cap design so as to not further impact the surrounding wetlands once the cap is completed on the Lake Calumet Cluster site. After the cap is built and work continues on redevelopment of the Lake Calumet Cluster site, the site will be restored as a wetland.

3.4 Extent of Site / Rationale for Including Four Areas

Comment: LCCG stated that the "HRS documentation record does not identify any reasonable basis on which all four of these parcels have been grouped together in a single proposed NPL Site, offering only that 'the contaminants discovered at the property are similar in nature, have commingled, and cannot be correlated to one specific source operation that occurred at the Cluster'''. It asserted that the inclusion of both the Paxton Lagoons and the Unnamed Parcels is based solely on their geographic proximity to the rest

of the site. LCCG claimed that there is no evidence that contamination from the Alburn and U.S. Drum portions of the site has "come to be located" on the Paxton Lagoons or Unnamed Parcels and, therefore, there is no sufficient basis for including either of these areas in the proposed cluster site. It concluded that the HRS documentation record contains no historical information that would show "any interrelationship or connection between or among the four parcels" that would justify their consideration as a single 'cluster' site.

Response: The Lake Calumet Cluster site consists of one source and the release to Indian Ridge Marsh from this source. The Lake Calumet Cluster site is a single site, and the four parcels constitute a single area-wide source consistent with definitions of "site" and "source" in the HRS.

The HRS Section 1.1, *Definitions*, defines a "site" as:

> Area(s) where a hazardous substance has been deposited, stored, disposed or placed, or has otherwise come to be located. Such areas may include multiple sources and may include the area between sources.

The HRS defines "source" in part as:

> Any area where a hazardous substance has been deposited, stored, disposed, or placed, plus those soils that have become contaminated from migration of a hazardous substance.

The site is not composed of four distinct sources coinciding with the four parcels, but is composed of a single source encompassing contamination within the four parcels and the areas where contamination released from that source has come to be located.

The rationale for identifying the four parcels as a single source is presented on page 11 of the HRS documentation record at proposal, and observed by LCCG in its comments, EPA noted that "[t]he contaminants discovered at the property are similar in nature, have commingled, and cannot be correlated to one specific operation that occurred at the Cluster." Accordingly, EPA concluded that "they are considered to be part of a single, overall source."

Moreover, EPA's discussion of Source 1 is consistent with the definition of "Source" above. The HRS documentation record does not attempt to define distinct individual boundaries of contaminated areas on each of the four parcels, even though it does identify the property boundaries for each parcel. Instead, EPA identified a single source, described as encompassing contamination within the four parcels, all of which results from activities performed at least partially on top of a larger, land filled area. EPA's identification of the comingled contamination among the four parcels resulted in EPA's treatment of all of these areas as one source. Thus, inclusion of the Paxton Lagoons and the Unnamed Parcel as part of this source is based on EPA's identification of hazardous substances within these areas. Hazardous substances associated with samples from more than one of these four parcels based on property boundaries, are as follows: (Note that other hazardous substances are associated with samples from the parcels as well.)

- Alburn Incinerator Area – Benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(k)fluoranthene, and benzo(g, h, i)perylene (Reference 39, Table 4 and Appendix 2).

- Paxton Lagoon – Benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, and benzo(k)fluoranthene, (Reference 27, Table 2, Figure 3, and Appendix A, pages 15, 23).

- Unnamed Parcel Area – Benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, and benzo(g, h, i)perylene (Reference 39, Table 4 and Appendix 2).

- US Drum Area – Benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene and benzo(k)fluoranthene (Reference 39, Table 4 and Appendix 2).

Surface and subsurface soils throughout the source, as well as sediment samples from the Indian Ridge Marsh to the east, demonstrate the presence of elevated concentrations of inorganics, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and PCBs. (See pages 11-13, 16-17, and 21-23 of the HRS documentation record at proposal).

With respect to LCCG's assertion that the HRS documentation record contains no historical information that would show "any interrelationship or connection between or among the four parcels" that would justify their consideration as a single "cluster" site, as discussed above and on page 11 of the HRS documentation record at proposal, the Lake Calumet Cluster HRS evaluation meets the HRS definitions of site and source. Moreover, EPA has in fact documented the interrelationship between the former incinerator (Alburn area), the drum storage facility (U.S. Drum area), an undocumented waste disposal area (Unnamed Parcel), and waste lagoons (Paxton Lagoons), stating on page 11 of the HRS documentation record at proposal that they were all constructed on top of a former landfill and the hazardous substances identified in them are similar and have commingled. These statements are also supported by several reports included as references, specifically Reference numbers 7, 16, 30. Hence, these assertions are without merit.

Further, even if the four areas had been identified as separate sources, they all would be considered sources within a single site, and the HRS site score would remain unchanged. They are all contiguous areas of contamination posing an indivisible threat to the targets exposed to the shared release to the Indian Ridge Marsh. That is, the four parcels are all releasing comingled contamination into the marsh through a shared probable point of entry. The same HRS pathway score, including the same Likelihood of release, Waste characteristics and Target scores would be assigned to the site if the single source had been identified as four separate sources as discussed in further detail below.

The same Likelihood of release score of 550 would be assigned if the single source had been identified as four separate sources because all four sources would be linked to the observed release in the marsh. The contamination from all four parcels has a comingled overland flow route to the marsh, and the observed release contaminants that drive the site score (e.g., benzo(a)pyrene and/or benzo(a)anthracene) would be associated with all four sources. (See HRS Section 2.4.1.2, *Hazardous substance selection*, and pages 16, 23, and 26 of the HRS documentation record at proposal regarding the selection of HRS factor values based on the presence of hazardous substances in an HRS evaluation; and the discussion immediately above regarding hazardous substances associated with parcels.)

The Waste characteristics score is composed of the waste quantity factor value and the combined toxicity/persistence/bioaccumulation value. At proposal, the source waste quantity of greater than zero was assigned to the single source. If the four parcels were scored as separate sources, the value assigned to each parcel would remain greater than zero. As scored in the proposal, sufficient information was not available to evaluate the hazardous constituent quantity, and instead a volume measure was applied in accordance with HRS Section 2.4.2.1.1. Even the volume measure resulted in a minimal (i.e., >0) volume value. See page 18 of the HRS documentation record at proposal. The same analysis would simply be repeated for each source (i.e., parcel) as discussed in further detail below.

At proposal, based on a source waste quantity estimate of greater than zero for the single site source, and the instructions in the HRS for assigning a pathway waste quantity value when actually contaminated targets are present, EPA assigned a surface water pathway hazardous waste quantity pathway value of 100 for this site because targets are subject to Level II contamination. (See pages 18-19 and 27 of the HRS documentation record at proposal). As explained below, the pathway waste quantity value would remain the same if the single source were scored as four separate sources. Section 4.1.4.3.1.2 of the HRS documentation record at proposal discusses the assignment of Level II concentrations to the targets at the site. HRS Section 2.4.2.2, *Calculation of hazardous waste quantity factor value,* states:

> Sum the source hazardous waste quantity values assigned to all sources (including the unallocated source) or areas of observed contamination for the pathway being evaluated and round this sum to the nearest integer, except: if the sum is greater than 0, but less than 1, round it to 1. Based on this value, select a hazardous waste quantity factor value for the pathway from Table 2-6.

HRS Section 2.4.2.2 continues:

> If the hazardous constituent quantity is not adequately determined for one or more sources . . . assign a factor value to the release as follows: If any target for that migration pathway is subject to Level I or Level II concentrations (see section 2.5), assign either the value from Table 2-6 or a value of 100, whichever is greater, as the hazardous waste quantity factor value for that pathway.

Since the sum of the source waste quantity values is used to assign the pathway waste quantity value, the value of "greater than zero" would remain the same if the single source were divided into four sources. Each would be assigned a value of "greater than zero" based on the presence of hazardous substances associated with each parcel area, and then summed to a value also of "greater than zero." After rounding the greater than zero value to "one" in accordance with HRS Section 2.4.2.2, this value results in a value of 1 under Table 2-6. However, since HRS Section 2.4.2.2 indicates that the higher of 100 or the Table 2-6 value should be assigned, the proposal's assigned hazardous waste quantity score of 100 is appropriate. Thus, even if each parcel were evaluated as a separate source, the targets evaluated at Level II concentrations would remain the same, and the same minimal hazardous waste quantity value would apply (i.e., greater than zero, since at least some hazardous substances have been identified at each parcel, as discussed earlier). Accordingly, the surface water pathway hazardous waste quantity would still be assigned a minimum value of 100, consistent with HRS Section 2.4.2.2.

The toxicity/persistence/ bioaccumulation combined factor value would be the same for either the one-source or the four-source scenario, because this value is based on the hazardous substance associated with a source (with a containment factor >0[1]) or in an observed release which results in the highest value (see HRS Section 4.1.4.2.1 and its subsections). If the highest scoring substance was in the single source, it would also be in at least one of the four parcels. Further, since the pathway waste characteristics factor value is based on the waste quantity and the combined toxicity/persistence/ bioaccumulation factor value, and neither of these values changes under the four-source scenario, the pathway waste characteristics value would also not change.

Finally, the targets factor value would be the same under both one source and the four-source scenario, as this value is based on the location of the observed release to the marsh, which would not change if the single source were divided into four sources.

[1] All four sources/parcels would have a containment factor >0, since EPA has documented the lack of a liner under the underlying landfill. See page 17 of the HRS documentation record at proposal.

Thus, if the single source were divided into four sources corresponding to the four parcels, the overall surface water pathway score would not change as the pathway Likelihood of release, Waste characteristics, and Targets factor values would not change, and thus the site score in turn would not change, given it was based solely on the pathway value.

3.5 Liability

Comment: Many of LCCG's comments appear to be focused primarily on issues of liability for future investigation and remediation costs. LCCG commented that the Alburn and U.S. Drum parcels make up less than 20 percent of the total area of the site. It noted that, based on the "alleged PRP list" that has been issued as part of EPA's December 17, 2004, Special Notice Letter, and other historical information, it appears that EPA has not identified any PRPs associated with alleged releases from the Paxton Lagoons or the Unnamed Parcel. LCCG concluded that the "intended effect" of the proposed cluster approach "is to unfairly hold the alleged Alburn and U.S. Drum transporters and generators responsible under CERCLA for addressing the investigation and potential future remediation" of the remaining parcels for which there are no identified PRPs. LCCG noted that EPA has been aware of the Alburn and U.S. Drum history and site conditions for many years but made no effort to place either on the NPL until the concept of clustering the parcels arose.

Response: The act of placing a site on the NPL does not establish or reflect a decision on whether any party may be liable for response costs, nor is liability considered when evaluating a site under the HRS. Moreover, the HRS scoring for the site does not state that any entities associated with the Alburn Inc. or U.S. Drum parcels are liable for releases of hazardous substances.

The NPL serves primarily as an informational and management tool. Listing a site on the NPL is intended primarily to guide EPA in determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with the site, and to determine what CERCLA-financed remedial action(s), if any, may be appropriate. Listing a site on the NPL does not reflect a judgment on the activities of the owner(s) or operator(s) of a site. It does not require those persons to undertake any action, nor does it assign any liability to any person. Other government actions are necessary in order to do so, and these actions will be attended by all appropriate procedural safeguards. This position, stated in the legislative history of CERCLA, has been explained in the Federal Register (48 FR 40759, September 8, 1983, and 53 FR 23988, June 24, 1988).

Regarding LCCG's statement that two areas of the site (for which PRPs have been identified) make up only a small percentage of the total area of the site, the acreages of these areas provided on pages 12 and 13 of the HRS documentation record at proposal refer to property boundaries as identified in the cited references. As discussed in section 3.4 of this support document, the site is not defined by the acreages of those parcels. The site instead consists of those areas where a hazardous substance has "come to be located." See HRS Section 1.1 The 1999 Phase I Sampling results from site assessment activities conducted by Ecology and Environment, Inc. (Reference 7 of the HRS documentation record at proposal), a report titled, *The Nature and Extent of Contamination at the Lake Calumet Cluster Site*, also prepared by Ecology and Environment, Inc. (Reference 30 of the HRS documentation record at proposal), *Addendum to the Expanded Site Investigation of the Lake Calumet Cluster Site* (Reference 39 of the HRS documentation record at proposal) and other references cited in the HRS documentation record describe the extent of the contamination in more detail.

3.6 Risk Levels

LCCG commented that "intensive site investigation and analysis over the past decade" show that the site poses little human health or environmental risk. LCCG's comments on human health risk and ecological risk are discussed in the following sections of this support document:

- Section 3.6.1 Human Health Risks
- Section 3.6.2 Environmental Risks

3.6.1 Human Health Risks

Comment: LCCG commented that "intensive site investigation and analysis over the past decade" show that the site poses little human health risk. LCCG noted that EPA claimed in the HRS documentation record at proposal that there was insufficient information available to evaluate other exposure pathways at the site. It claimed that, to the contrary, the City of Chicago and EPA have conducted both human and ecological risk assessments that evaluate these omitted pathways. LCCG concluded, "[t]hat USEPA now elects to not score the site by these other pathways indicates that the site does not, in fact, pose a significant threat to human health or the environment." LCCG commented that human health risk assessments that have been conducted were "apparently not consulted" during the preparation of the HRS documentation record.

Response: The HRS provides specific instructions on how to score a site using its provisions. It is not itself a site-specific risk assessment and it does not rely on the results of other risk assessments in order to calculate an HRS score. Moreover, the commenter does not identify any data from those risk assessments that affect the elements of EPA's HRS score for this site.

The HRS is the principal mechanism EPA uses to place uncontrolled waste sites on the NPL. It is a numerically based screening system that uses information from initial, limited investigations -- the preliminary assessment and site inspection -- to assess the relative potential of sites to pose a threat to human health or the environment. Since the HRS is only a screening tool and a measure of relative risk among sites, an HRS evaluation does not reflect a site-specific risk assessment. Instead, the HRS simply assigns a higher relative weight if one site has more waste quantity than another site, has a more toxic substance than another site, and so forth. Site-specific risk assessments are performed at another stage of the Superfund remediation process.

Furthermore, there is no requirement either in CERCLA or in the HRS that the Agency evaluate all possible pathways of exposure when the Agency undertakes an HRS evaluation at a site. The HRS is a screening tool used to identify, as expeditiously and economically as possible, those sites that appear to merit additional investigation and possible remediation That EPA did not evaluate other pathways does not indicate that those pathways necessarily show little relative risk posed by the site. Rather, additional scoring could possibly increase the overall site score. Accordingly, where additional time and effort to score additional pathways, targets, or sources would not add significantly to the HRS site score or change the listing decision, in order to conserve its limited resources, EPA may choose not to evaluate such additional scoring options. Such data collection and analysis are conducted during a separate stage of the Superfund remediation process.

Even so, the HRS documentation record does identify the possibility of other pathways of exposure other than the surface water overland/flood migration component that the site's HRS score was based upon. For example, in connection with the discussion of attribution of the observed release to the source on page 24, it states that:

> Contaminants allowed to leak onto the ground have contributed to the contamination of the soil and ground water in the area. Even though ground water is not utilized in the area, it has been documented that the ground water releases to the surface water . . . Observations show that ground water is flowing into the surface water in Indian Ridge Marsh.

In addition, while the potential for exposure through the aquatic human food chain threat of the surface water pathway was not scored, the presence of a threat via that route is discussed in the HRS documentation record at proposal (see, for example, the bottom of page 24, where it is noted that both Indian Ridge Marsh and the Calumet River are "documented" fisheries). As observed in section 3.2.1 of this support document, EPA will take into consideration several factors in deciding what response activities are required, including the NPL ranking, State priorities, further site investigation, other response alternatives, and other factors as appropriate.

Finally, EPA notes that LCCG is mistaken in its assertion that site investigation and analysis over the past decade have concluded that the site poses little human health risk. At least one human health risk assessment, the *Human Health Risk Assessment Report, Lake Calumet Cluster Site: Alburn, U.S. Drum, and Unnamed Parcel Areas Final Report*, February 2002, prepared for City of Chicago Department of Development, concluded that carcinogenic risks exceeding 1E-06[2] exist, primarily due to exposure to soil for arsenic, benzo(a)pyrene, dibenz(a,h)anthracene, total PCBs, toluene and vinyl chloride in the Alburn area, U.S. Drum Area, and Unnamed Parcel area (see page 8-1 of *Human Health Risk Assessment Report, Lake Calumet Cluster Site: Alburn, U.S. Drum, and Unnamed Parcel Areas Final Report*, February 2002).

3.6.2 Environmental Risks

Comment: LCCG commented that, regardless of the source of contamination in Indian Ridge Marsh, the concentrations are "unremarkable" and typical of levels expected in sediments in industrialized areas. It noted that concentrations identified in the recent *Addendum to the Expanded Site Inspection of the Lake Calumet Cluster Site* (Reference 39 of the HRS documentation record at proposal) are consistent with contaminant levels found in earlier joint EPA and IEPA investigations that showed "widespread, low-level PAH concentrations in sediments." LCCG stated in a footnote that, while some of the concentrations exceed the "Lowest Effects Level" screening criteria, none exceed the "Significant Effects Level" criteria typically used by EPA in evaluating contaminant concentrations in sediments. LCCG commented that ecological risk assessments that have been conducted were "apparently not consulted" during the preparation of the HRS documentation record. LCCG commented that the presumption that there is an environmental risk in Indian Ridge Marsh is inaccurate. It added that site-specific studies (e.g. *Final Report, Ecological Risk Assessment, Lake Calumet Cluster Sites, Chicago, Illinois*, November 2001) conducted by EPA show that the environmental threat assumed in the HRS documentation record is non-existent.

Response: LCCG is mistaken in its assertion that the site poses little environmental risk. (See also the response to comments in section 3.6.1 of this support document.) Indeed, an examination of the document cited by LCCG, *Final Report, Ecological Risk Assessment, Lake Calumet Cluster Sites, Chicago, Illinois*, November 2001, prepared by EPA's Environmental Response Team Center, indicated that it concludes:

[2] Carcinogenic risk 1E-06 means 1 excess case of cancer per million people exposed, the risk level at which EPA determines that a site poses sufficient risk that it warrants a response action, either by risk management or by remediation.

> There is risk to the aquatic and terrestrial communities living on or near the LCC Site. Site pond water, sediment, and soil caused significant toxic effects to organisms exposed in laboratory tests. The benthic community was in poor health in a 1998 survey. Additionally, the results of the food chain exposure models calculated that there is risk to receptor communities. These models focused on risks to organisms using the site as a food source. Therefore, the HQs calculated using these models used only contaminant exposure from food sources. Contaminant concentrations in water, sediment, and soil were excluded from these models. The risk to receptor organisms living on the site is likely underestimated, and there is likely risk to off-site communities preying on organisms that use the site. (Page 30, *Final Report, Ecological Risk Assessment, Lake Calumet Cluster Sites, Chicago, Illinois*, November 2001).

Regarding sediment concentrations not exceeding "significant effects levels," this does not necessarily mean there is no ecological threat posed by the release at the site. As documented in the ecological risk assessment discussed above, an ecological threat has been associated with the site based on direct evidence of poor health of the benthic community, and there are risks to receptor communities based on food chain exposure models.

Moreover, an HRS evaluation does not use "significant effects levels" when it identifies the threat posed by the site. Rather, the HRS evaluation identifies the conditions that are associated with an environmental threat. For example, as part of this evaluation, EPA identified a zone of contamination in the marsh based on observed release samples and actually contaminated environmental targets of hazardous substances known to bioaccumulate in the environment. That an observed release has been identified documents this threat: an observed release represents a 100 percent likelihood that these substances can migrate from the site (47 FR 31188, July 16, 1982) and unless remediated, will continue to do so.

Section 2.3 of the HRS (55 FR 51589, December 14, 1990) states that an observed release can be established either by direct observation or by chemical analysis. An observed release by chemical analysis has occurred when a contaminant is measured significantly above background level if some portion of the release is attributable to the site. An observed release has occurred if the measured levels are significantly higher than background levels, regardless of whether those background levels are above or below any regulatory or non-regulatory levels. The HRS does, however, consider whether releases are above certain regulatory limits in evaluating target populations, increasing by a factor of 10 the weight assigned populations exposed to contaminants above the limits.

Of course, the observed release factor alone is not intended to reflect the hazard presented by the particular release. Instead, the hazard of the site is approximated by the total HRS score, which incorporates the observed release factors with other factors such as waste characteristics (including waste quantity, toxicity, and persistence) and targets. This total HRS score reflects the hazard of the site relative only to the other sites that have been scored. The actual degree of contamination and its effects are more fully determined during a separate stage of the Superfund process.

As just discussed, the HRS has generally been designed to indirectly consider environmental concentrations of released hazardous substances by lowering the score of populations exposed when their levels do not meet certain benchmarks. In general, the HRS refers to particular values as "benchmarks" above which associated targets subject to "actual" (as opposed to "potential") contamination are treated as higher-scoring "Level I" targets. See HRS Section 2.5, *Targets*, which states to:

> Determine whether the actual contamination is Level I or Level II as follows:
> - Level I:
> --Media-specific concentrations for the target meet the criteria for an observed release (or observed contamination) for the pathway and are at or above media-specific benchmark values. These benchmark values (see section 2.5.2) include both screening concentrations and concentrations specified in regulatory limits (such as Maximum Contaminant Level (MCL) values, or . . .

HRS Section 2.5.2, *Comparison to benchmarks,* continues:

> Use the following media-specific benchmarks for making the comparisons for the indicated pathway (or threat):
> - EPA Ambient Water Quality Criteria (AWQC) for protection of aquatic life-environmental threat in surface water migration pathway.
> - EPA Ambient Aquatic Life Advisory Concentrations (AALAC) – environmental threat in surface water migration pathway.

For evaluating the environmental threat of the surface water migration pathway, HRS Table 4-22, *Ecological-Based Benchmarks for Hazardous Substances in Surface Water,* also lists the appropriate benchmarks for evaluating Level I targets for this threat. The benchmarks listed in HRS Table 4-22 are the same benchmarks (AWQC and AALAC) listed in HRS Section 2.5.2, discussed above. The AWQC and the AALAC are water quality benchmarks based on contaminant levels in water samples and cannot be compared to contaminant levels in sediment samples. EPA has not established sediment benchmark AWQC or AALAC values for the chemicals used to evaluate the sensitive environments targets in the surface water pathway overland/flood migration component. All sediment samples meeting observed release criteria (i.e., subject to "actual contamination") are thus considered as Level II concentrations and all associated targets at these Level II concentrations are assessed as Level II populations. See HRS Sections 2.5, 4.1.2.3, and 4.1.4.3.1.

3.7 Size of Source

Comment: LCCG commented that the HRS documentation record is inconsistent in defining the area of the "site." LCCG noted that, while the combined acreages of the four separate areas "totals about 65 acres," the Source Description indicates that the site [sic] is 87 acres. LCCG also submitted Figures 1 and 2 of its comments which it states show the perimeter of the site encompasses 65 acres.

Response: The site at proposal included the source area and the areas where released hazardous substances had come to be located. The exact area of the site is not precisely defined at the time of NPL listing, but is examined further at a different stage of the Superfund process. As noted in the preamble to the proposed listing of the Lake Calumet Cluster site:

> [w]hile geographic terms are often used to designate the site . . . the site properly understood is not limited to that property . . . The 'site' is thus neither equal to nor confined by the boundaries of any specific property. . . The precise nature and extent of the site are typically not known at the time of listing. . . . EPA regulations provide that the 'nature and extent of the problem presented by the release' will be determined by a Remedial Investigation/Feasibility Study ('RI/FS') as more information is developed on the site contamination . . . (see 70 FR 54327, Part F, Does the NPL Define the Boundaries of Sites?, September 14, 2005).

In its comment and in its figures, LCCG has incorrectly identified the "site" as encompassing only the source area. Moreover, the HRS documentation record at proposal does not indicate that the "site" is 87 acres in area, but that the land filled area, upon which activities at the four parcels later occurred, is 87 acres in area. Page 11 of the HRS documentation record at proposal states:

> It [the source] is comprised of a group of contiguous areas previously utilized as a former incinerator, drum storage facility, an undocumented waste disposal area, and a hazardous waste lagoon which were constructed on top of a 87 acre landfill.

Regardless of the mistaken terminology, the HRS documentation record at proposal did not assign any HRS factor value based on the 87-acre estimate for the landfill.

The source at the Lake Calumet Cluster site was assigned a minimal volume of waste to be associated with the source as a value of "Unknown but > 0". See page 18 of the HRS documentation record at proposal. And, consistent with HRS Section 2.4.2.1.3, *Volume*, since the volume of the source was estimated, the source was assigned an area value of 0. Further, the source type identified for the source at this site was "other," and HRS Table 2-5, *Hazardous Waste Quantity Evaluation Equations*, does not provide for the evaluation of an area value for source type "other." Hence, any source descriptive information regarding the area of the source was not used to assign a source area value, nor was it presented to assess the size of the site, which as explained previously, is not fully determined by the HRS evaluation.

Regarding the statement that the acreage of the four separate parcels "totals about 65 acres" in Figures 1 and 2 of LCCG's comment, using the area boundaries determined on those figures, the source area size does appear to be approximate 65-67 acres. However, as explained above, any area value is not relevant to the listing decision and was not used in HRS scoring.

3.8 Surface Water Migration Pathway Scoring

LCCG raised a number of issues concerning specific aspects of the HRS scoring of the surface water pathway which it considers to be inaccurate, and claims that, if these inaccuracies were corrected, the site would not qualify for the NPL. These comments are addressed in the following sections of this support document:

- Section 3.8.1 Surface Water Overland Flow Pathway
- Section 3.8.2 Likelihood of Release

3.8.1 Surface Water Overland Flow Pathway

Comment: LCCG quoted the HRS documentation record concerning the location of the probable point of entry (PPE) of contamination to Indian Ridge Marsh and commented that this location as shown in Figure 1 of its comments is "approximately 700 feet north of the northern boundary of the . . . [site] and is located at the 70-acre Paxton I Landfill site, a former municipal and commercial landfill that is already being remediated by the Illinois Environmental Protection Agency (IEPA)." LCCG commented that the topography of the site is not consistent with EPA's HRS scenario and does not support the statement that surface water from the site enters Indian Ridge Marsh via the PPE location described in the HRS documentation record. It claimed that land surface at the site slopes gently to the southeast with the lowest surface elevation at the site near the southeast corner of the site, which is "the opposite direction from the identified PPE to Indian Ridge Marsh." LCCG claimed that EPA's northward flow scenario is based on a "purported" observation during a site visit but that this observation is "contradicted by the IEPA topographic mapping that shows sections of the drainage ditch along the eastern side of the . . .[site]

sloping to the south. . . ."[3] As evidence for this view, LCCG commented that IEPA topographic mapping shows a "ditch invert" elevation near the northeast corner of the site as being 0.4 feet higher than the elevation 540 feet to the south, and claimed that "[f]or at least the northernmost 500 to 600 feet of this ditch, the ditch bottom slopes to the south."

Response: EPA has considered LCCG's comment that topographic information supports LCCG's inference for another probable point of entry (PPE) to surface water from the source at the site. However, this inference is not inconsistent with, and therefore does not refute, the PPE documented in the HRS documentation record at proposal.

The overland flow from the source to surface water was determined based on visual evidence consistent with the HRS. HRS Section 4.1.1.1, *Definition of hazardous substance migration path for overland/flood migration component*, states:

> The hazardous substance migration path includes both the overland segment and the in-water segment that hazardous substances would take as they migrate away from sources at the site:
> - Begin the overland segment at a source and proceed downgradient to the probable point of entry to surface water.
> - Begin the in-water segment at this probable point of entry.

In such a "gently sloping," area, the 0.4 foot difference in elevation in the ditch on the eastern edge of the source does not prevent a downgradient flow from the source to the north after a significant precipitation event. The ditch cited by LCCG collects runoff during precipitation events, and the water escapes wherever it can. There are two culverts documented to be located north of the source, which carry runoff from the source to Indian Ridge Marsh. Once the water levels exceed the elevation difference within the ditch, water therefore flows northward and out of the culverts. This is clearly shown by the documented discharge into Indian Ridge Marsh via the two culverts. See Reference 39 of the HRS documentation record at proposal. That LCCG observed that some runoff could flow south due to a difference in topographic elevation, does not necessarily show that the PPE identified for the discharge to Indian Ridge Marsh is incorrect. Instead, it shows that overland flow migration route can be affected by topography as well as the water elevation during heavy precipitation as was observed visually and documented in Reference 39

As presented on page 21 of the HRS documentation record at proposal, there was a significant precipitation event during the November/December 2004 sampling event for the *Addendum to the Expanded Site Investigation of the Lake Calumet Cluster Site* (Reference 39 of the HRS documentation record at proposal). A review of the photographs in Appendices 2 and 3, *Photo Documentation of Sample Locations* and *Photo Documentation of Overland Flow*, respectively, of that document clearly shows that this event resulted in standing water over much of the source area. Overland flow at that time from the source area is west to east following channels and roadways. (See Reference 39, Appendix 3, of the HRS documentation record at proposal.) When the flow reaches the eastern portion of the area, the water flows into a ditch paralleling the Norfolk and Southern railroad tracks. As documented in the specified Appendices to Reference 39, flow in the ditch at the time of the investigation was to the north toward the culverts identified in the HRS documentation record as the PPE to Indian Ridge Marsh. Photographs 15 and 16 of Appendix 3, *Photo Documentation of Overland Flow*, show the western end of one of the

[3]LCCG cited Atlantic Technologies, Inc., May 2001, "Calumet Ecological Management Strategy, Phase 1 Area," topographic sheets as "site topographic mapping developed on behalf of IEPA." LCCG did not submit the cited study, and it is not in the HRS package or the Region's site file.

culverts partially submerged in the ditch, while photographs 17 through 22 of Appendix 3 show the culvert discharging to the east into Indian Ridge Marsh. These photographs were taken by Thomas Crause, Manager of the Office of Site Evaluation, Illinois EPA. Mr. Crause has been with Illinois EPA for over 20 years.

Additionally, as evidenced by the map titled, "Boring and Piezometer Plan, Interlake Site, Chicago, Illinois," (see Reference 12, *CERCLA Expanded Site Inspection*, 1999, of the HRS documentation record at proposal), the topography of the source area is primarily flat with some slight depressions where standing water frequently collects. Soils at the source do not encourage infiltration due to the deposition of slag throughout the area, and precipitation collects in these depressions or runs off via ditches on and around the source. (See pages 4, 14, and 15 of Reference 12 of the HRS documentation record at proposal; see page 4 of Reference 39 of the HRS documentation record at proposal). In any case, any runoff moving southeast across the source area will migrate to the small pond in the southeastern corner of the site, which eventually overflows into the ditch along the eastern edge of the source. This is the same ditch that carries runoff from the northern portion of the source to the PPE. (See Reference 39 of the HRS documentation record at proposal, page 3, Appendices 2 and 3). Thus, it can be expected that any flow to this portion of the source area would also flow to the PPE located to the north when water pools sufficiently so that the pooled water surface elevation is sufficiently high to overcome the soil surface grade.

Moreover, even if there is more than one PPE to surface water, the PPE documented in the HRS documentation record at proposal is the PPE from which the surface water pathway in-water segment begins. Since the target distance limit (TDL) is measured from the PPE, see HRS Section 4.1.1.1, considering an additional PPE downstream from the PPE to surface water would only extend the TDL further downstream, allowing more targets to be eligible for scoring (see HRS Section 4.1.1.2, *Target distance limit*, which states, "[t]he targets distance limit defines the maximum distance over which targets are considered in evaluating the site.").

Therefore, EPA considers this information to sufficiently document the PPE identified at proposal, and its conclusions do not change upon consideration of LCCG's cited evidence.

3.8.2 Likelihood of Release

LCCG made several comments that call into question an observed release from the source area to Indian Ridge Marsh. Specifically, LCCG raised issues about contaminant patterns at the source and in the marsh and identified alternative sources of the contamination. The specific issues raised by the commenter are addressed in the following sections of this support document:

- Section 3.8.2.1 Observed Release
- Section 3.8.2.2 Release of Benzo(a)pyrene
- Section 3.8.2.3 Attribution

3.8.2.1 Observed Release

Comment: LCCG commented that the HRS scoring for the Lake Calumet Cluster site is based on the assumption that runoff from the site enters Indian Ridge Marsh, depositing polynuclear aromatic hydrocarbons (PAHs) in sediments in the marsh and that these sediments represent an environmental threat. LCCG concluded that "[t]his line of analysis is inaccurate and unreliable. . . ."

Response: An observed release by chemical analysis of hazardous substances, including PAHs, was appropriately documented in Indian Ridge Marsh as part of the HRS scoring of the Lake Calumet Cluster

site. HRS Section 2.3, *Likelihood of release*, states that that an observed release can be established either by direct observation or by chemical analysis. It also states that,

> The minimum standard to establish an observed release by chemical analysis is analytical evidence of a hazardous substance in the media significantly above the background level. Further, some portion of the release must be attributable to the site. Use the criteria in Table 2-3 as the standard for determining analytical significance.

HRS Table 2-3, *Observed Release Criteria for Chemical Analysis*, states:

> An observed release is established as follows:
>
> - If the background concentration is not detected (or is less than the detection limit), an observed release is established when the sample measurement equals or exceeds the sample quantitation limit.
> - If the background concentration equals or exceeds the detection limit, an observed release is established when the sample measurement is 3 times or more above the background concentration.

A footnote to HRS Table 2-3 further states:

> If the sample quantitation limit (SQL) cannot be established, determine if there is an observed release as follows:
>
> ─ If the sample analysis was performed under the EPA Contract Laboratory Program, use the EPA contract-required quantitation limit (CRQL) in place of the SQL.
>
> ─ If the sample analysis is not performed under the EPA Contract Laboratory Program, use the detection limit (DL) in place of the SQL.

The HRS documentation record for the Lake Calumet Cluster site identifies on pages 21-25 samples throughout Indian Ridge Marsh, a surface water body[4] at the site containing CERCLA hazardous substances at concentrations that meet the criteria for finding an observed release by chemical analysis. The information is as follows:

- On pages 21-22 of the HRS documentation record at proposal, sample X203 documented the background level used to evaluate the observed release samples. This background sample was collected in the northern portion of the southern lagoon in Indian Ridge Marsh at a depth of 6 to 12 inches with water approximately 1.5 feet deep (see page 9 and Figure 3 of Reference 39 of the HRS documentation record at proposal). This background location in Indian Ridge Marsh is in an area suspected of low impact from contaminants and is not located in the main channel of the marsh (see page 21 of the HRS documentation record at proposal). This background sample was analyzed

[4] Although not questioned by LCCG, EPA notes that HRS Section 4.0.2, *Surface water categories*, includes wetlands contiguous to perennially flowing waters as a "river," an eligible type of surface water. Hence, Indian Ridge Marsh is an eligible surface water body at this site.

using Contract Laboratory Program (CLP) methods, and a sample quantitation limit (SQL)[5] of 710 µg/kg was reported for fluoranthene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, phenanthrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, benzo(a)anthracene, and pyrene. None of these hazardous substances were detected at or above the SQL of 710 µg/kg.

- On pages 22-23 of the HRS documentation record at proposal, samples X201, X214, and/or X215 were shown to contain observed release concentrations of multiple hazardous substances, including: fluoranthene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, phenanthrene, benzo(g,h,i)perylene, benzo(a)anthracene, and/or pyrene in Indian Ridge Marsh downstream of the PPE. Observed release concentrations of these hazardous substances were all above the background sample SQL and the observed release sample SQL[6]. Concentrations of hazardous substances ranged from 2200 µg/kg to 3500 µg/kg.

The HRS documentation record at proposal shows that at least some portion of the significant increase is attributable to the source at the Lake Calumet Cluster site. The overland flow from the source at the site, as discussed in section 3.8.1 of this support document, documents the migration of substances from the source at the site to Indian Ridge Marsh. Overland flow via runoff was observed to directly discharge into Indian Ridge Marsh via culverts connecting the source to Indian Ridge Marsh. See section 3.8.2.3 of this support document for further discussion of attribution of the release to Indian Ridge Marsh.

3.8.2.2 Release of Benzo(a)pyrene

Comment: LCCG commented that benzo(a)pyrene was detected at "varying, low-level concentrations" in downstream sediments in Indian Ridge Marsh but that "no benzo(a)pyrene was detected in sediments at the PPE."

Response: The HRS evaluation does not require that hazardous substances associated with a source be detected at the PPE or in all observed release samples documenting a release of hazardous substances to the surface water pathway. Furthermore, although not required, the HRS documentation record at proposal presented analytical data showing observed release substances other than benzo(a)pyrene in a sediment sample, X214, at the PPE in Indian Ridge Marsh. This sample and other observed release samples documented hazardous substances in Indian Ridge Marsh. In addition, as discussed below, although not identified in the HRS documentation record at proposal, benzo(a)pyrene was found in sample X214 and documented in a reference contained in the HRS documentation package available to the public at the time of proposal.

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[5] The HRS documentation record incorrectly refers to the SQL as a contract required detection limit (CRDL), although this has no effect on the finding of an observed release or the site score. According to pages 403, 404, and 545 of Reference 38 of the HRS documentation record at proposal, this sample was analyzed using analytical methods for low soil according to CLP SOW OLM04.3. The contract required quantitation limits (CRQLs) for low soil specified in CLP SOW OLM04.3 can be obtained at http://www.epa.gov/superfund/ programs/clp/download/olm/olm43fs.pdf, which lists the CRQL for fluoranthene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, phenanthrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, benzo(a)anthracene, and pyrene as 330 µg/kg. Page 415 of Reference 38 defines the data qualifiers associated with the analytical data and states that analytes not detected above the SQL were flagged U. Page 545 of Reference 38, cited in the HRS documentation record to support the analytical data for sample X203, lists 710 U for fluoranthene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, phenanthrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, benzo(a)anthracene, and pyrene, indicating that these analytes were not detected above the SQL of 710 µg/kg.

[6] The HRS documentation record incorrectly refers to the SQL as a CRDL. See discussion above regarding sample analysis and pages 403, 404, 415, 578, 581, 584, and 1019 of Reference 38 of the HRS documentation record at proposal.

In the HRS scoring of the Lake Calumet Cluster site, benzo(a)pyrene was documented in the source[7] at the site as well as in observed release samples from Indian Ridge Marsh consistent with the HRS. In addition to the direction in HRS Section 2.3, *Observed release*, cited above, HRS Section 4.1.2.1.1, O*bserved release*, also provides directions for documenting an observed release to the surface water pathway. When documenting an observed release by chemical analysis to the surface water pathway, HRS Section 4.1.2.1.1 states that observed release is demonstrated in part when:

> Analysis of surface water, benthic, or sediment samples indicates that the concentration of hazardous substance(s) has increased significantly above the background concentration for the site for that type of sample (see section 2.3).

HRS Section 4.1.2.1.1 further notes that the scorer should:

> Limit comparison to similar types of samples and background concentrations – for example, compare surface water samples to surface water background concentrations.

Under these instructions, the HRS requires only that the observed release contaminant concentrations be significantly above background levels for the media being evaluated, and does not require that the scorer consider the concentrations of the substance present at the PPE. In documenting the observed release to Indian Ridge Marsh, both the background and the observed release samples were sediment samples collected from Indian Ridge Marsh. That is, the comparison of similar samples for the media being evaluated was accomplished as required by HRS Section 4.1.2.1.1. In this case, the background level for benzo(a)pyrene in sample X203 was not detected at or above the background sample SQL of 710 µg/kg. Thus, any release sample that documents benzo(a)pyrene at or above the background SQL of 710 µg/kg meets the significant increase criteria for an observed release by chemical analysis (see HRS Table 2-3). In release sample X215 (east of the culvert in Indian Ridge Marsh), the concentration of benzo(a)pyrene in that sample is 3400 µg/kg. In release sample X201 (in Indian Ridge Marsh), the concentration of benzo(a)pyrene in that sample is 2900 µg/kg. (See page 23 of the HRS documentation record at proposal.) Thus, the significant increase criteria, as explained above and specified in HRS Sections 2.3 and 4.1.2.1.1, were met.

Further, samples X201 and X215 are not the only samples that establish an observed release at the site, and an observed release has been documented for many other substances as well (see page 23 of the HRS documentation record at proposal). Thus, even if benzo(a)pyrene had not been identified as an observed release substance released from this site, the HRS Likelihood of release pathway value would not change, nor would the site score.

Finally, evidence included in references to the HRS documentation record at proposal show that benzo(a)pyrene was in fact found in a sample at the PPE. For example, Table 5 and Figure 3 of Reference 39, *Addendum to the Expanded Site Investigation of the Lake Calumet Cluster Site*, of the HRS documentation record at proposal show sample X214, collected on December 1, 2004, at the PPE to Indian Ridge Marsh (i.e., from the culvert outflow area where the culvert was discharging into Indian Ridge Marsh). This sample shows that benzo(a)pyrene was documented in this sample at a concentration of 1900

[7] On page 16 of the HRS documentation record at proposal, benzo(a)pyrene and numerous other hazardous substances are associated with the source via several samples. Of these samples, three soil samples, X180dl, X196dl, and X113dl, documented benzo(a)pyrene at 33,000 µg/kg, 33,000 µg/kg, and 25,000 µg/kg, respectively. Additional samples documenting benzo(a)pyrene and numerous other samples associated with the source are also found in Tables 4 and 5 of the *Addendum to the Expanded Site Investigation of the Lake Calumet Cluster Site*, Reference 39 of the HRS documentation record at proposal.

µg/kg. Hence, contrary to the LCCG's claim, benzo(a)pyrene was documented in a sample at the PPE. However, as explained above, if this finding were included in the HRS documentation record and in the HRS evaluation, the Likelihood of Release value and the HRS site score would not change.

3.8.2.3 Attribution

LCCG's comments on the attribution of the release of hazardous substances from the source at the site are discussed in the following sections of this support document:

- 3.8.2.3.1 Contaminant Patterns
- 3.8.2.3.2 Other Sources of Release

3.8.2.3.1 Contaminant Patterns

Comment: LCCG argued that the data used in the HRS documentation record "show that . . . [the site] is not the source of the PAHs observed at and downstream of the PPE in Indian Ridge Marsh." It compared contaminant concentrations in three samples from the marsh (X201, X214, X215) to two samples (X104 and X105) taken from the bank of the ditch along the eastern side of the source identified as potentially exposed to surface water drainage. LCCG commented that the concentrations in the wetland samples were approximately an order of magnitude greater than those directly adjacent to the source. LCCG concluded, "[c]learly, the LCCS [Lake Calumet Cluster Site] is not the source of the hazardous substance release upon which the HRS is based." LCCG also commented that during the investigation for the Addendum (Reference 39 to the HRS documentation record at proposal), IEPA collected a sample from the ditch along the eastern edge of the source, but claimed that, "[f]or whatever reason, no data for this sample (sample X219) were provided in the IEPA February 8, 2005 report."

Response: The release found in the Indian Ridge Marsh is correctly documented as attributable at least in part to the site, and specifically to the site source. Furthermore, as discussed below, the presence of lower contaminant levels in limited screening level samples from one particular location within the source area than in the observed release media is not inconsistent with EPA's conclusion that the release is attributable at least in part to the site. Moreover, the HRS does not require contamination levels in source samples and observed release samples to be identical or even comparable.

The locations of soil source samples X104 and X105, as well as the location of other samples used to establish the observed release to the marsh cited by the commenter, are identified on page 6 of the *Addendum to the Expanded Site Inspection of the Lake Calumet Site* (Reference 39 to the HRS documentation record at proposal). They are described in this reference as locations of "possible" or "suspected" surface water drainage or channeling (see *Photo Documentation of Overland Flow* in Reference 39 to the HRS documentation record at proposal).

HRS Section 2.3, *Likelihood of Release*, states that ". . . some portion of the release must be attributable to the site." [emphasis added] HRS Section 4.1.2.1.1, *Observed release*, is specific to the surface water migration pathway, and uses similar language.

The HRS documentation record states on page 24-25:

> Former activities at the Lake Calumet Cluster included: drum storage, disposal, transfer, incineration of wastes, illegal dumping of contaminants, burying of wastes and unpermitted landfill operations (Ref. 7, p. 1). From the amount and array of contaminants found during past inspections, removals and sampling, it has been

> documented that many different types of contaminants were accepted at the various areas constituting the Lake Calumet Cluster. . . .The landfill at the cluster contains numerous hazardous substances including inorganics, volatile organic chemicals (VOCs), semi-volatile organic chemicals (SVOCs), polychlorinated biphenyls (PCBs) and pesticides ((Ref. 21, Tables 2-5), (Ref. 22, Table 2), (Ref. 27, Table 2)). . . .Sediment samples collected in 1998 and 2004 show contamination in parts of Indian Ridge Marsh (Ref. 30, Table E-8 and Ref. 39, Table[s] 3 and 5). Surface water runoff from a portion of the Cluster flows into ditches along the perimeter of the source areas. These ditches drain into a culvert that discharges into Indian Ridge Marsh (Ref. 6, p. 8 and Ref. 39, Appendix 3). . . .The source of the surface water contamination is, at least in part, the contaminated ground water plume that is in direct communication with the surface water. . . .

In establishing that the observed release in Indian Ridge Marsh is in part attributable to the site, the HRS evaluation documented hazardous substances in the source at the site, and documented that the same hazardous substances found in the source samples were also found in sediment samples used to evaluate an observed release to Indian Ridge Marsh. Further, visual observations were made and documented in photographs showing the overland flow from the source to the ditch which discharges directly to Indian Ridge Marsh. The source at this site drains to Indian Ridge Marsh via this PPE. Further, contaminated ground water and surface water are in connection with each other. Surface water depths in the marsh were measured below ground water levels indicating that contaminated ground water can discharge to surface water at the site. (See page 25 of the HRS documentation record at proposal and pages 45-46 of Reference 4 of the HRS documentation record at proposal.)

In addition, page 17 of the HRS documentation record at proposal, in discussing the containment of the site source, provides still more evidence that the release is properly attributed at least in part to the site. It states that:

> The source area has been flooded at a time that a hazardous substance was present in the source, and material containing a hazardous substance was in direct contact with the surface water.

This observation documents that the flood water, which drains into the marsh via the identified PPE (see section 3.8.1 of this support document), could carry contamination from the source into the marsh. Thus, this observation also supports the attribution of at least part of the contamination in the marsh to this site via overland flow. The simple finding that a soil sample from the boundary of a source area and in a draining channel has a lower concentration of contaminants than in downstream sediment samples is not evidence that a release did not migrate from the source via the drainage channel. This is because contamination levels in soils are a function of multiple factors particularly in an open environment. Without more information, it is not possible to determine what precisely is occurring at this sample location. Therefore, in light of the substantial documentation of attribution of at least part of the release to the site, EPA has not changed its opinion in this respect.

Contamination from the source may be migrating either dissolved in the water phase of runoff, or sorbed to particulates suspended in the water by erosion. If the contamination is sorbed to particulate matter and coming from upgradient or even if just another portion of the source of the sample location in question, it could easily remain suspended as it passes by this location. If the contamination is dissolved in the overland flow, then the amount that would sorb to soil or sediment depends on the physical makeup of the soil and sediment and on the time over which the dissolved contaminants are exposed to the soil or sediment (i.e., the exposure time).

At this site the exposure time in the runoff channel is likely less than in a wetland simply because of wetlands' slow flow rates and since the channel only contains water during overland flow events. Thus, more sorption would occur in a wetland than in a channel.

Similarly, as is the case for this site, the physical makeup of the soil at the channel sample location is different than in the wetland. EPA has examined the documentation for the two source samples cited by LCCG, and that documentation shows those samples to be physically considerably different in makeup and texture from the release samples. This leads EPA to consider that the disparity in contaminant concentrations reflects those differences in physical makeup. The *Addendum to the Expanded Site Inspection of the Lake Calumet Cluster Site*, (Reference 39 to the HRS documentation record at proposal), describes samples X104 and X105 as sandy loam and silty clay material, respectively. The sediments in the wetland samples cited by the commenter (X201, X214 and X215) are all described as "silty black sediment" with two of them containing "brown peat materials" (see section titled, *Inspection of the Lake Calumet Cluster Site,* in Reference 39 of the HRS documentation record at proposal). The wetland samples, with their higher organic content, have entirely different sorption properties than the two source soil samples. Because generally, like substances preferentially sorb to like substances, e.g., organic substances into organic matter, that the PAHs found at the site would likely sorb to a greater extent to organic materials in samples with higher organic contents is expected and is identified above for wetland sediments, in that the wetland samples contain brown peat materials and the source samples do not. Thus, the PAHs associated with this site would be expected to be higher in concentration in the wetland samples

Furthermore, to the extent that the comment is calling into question the increase in hazardous substances over source concentrations, the comparison suggested in the comments (i.e., between the release samples and soil samples taken from the source itself), is not relevant under the HRS for establishing an observed release by chemical analysis. The HRS does not require that observed release concentrations approach or exceed contaminant levels documented in sources at the site. Instead, the HRS requires a significant increase above background samples. HRS Section 2.3, *Likelihood of release*, states:

> The minimum standard to establish an observed release by chemical analysis is analytical evidence of a hazardous substance in the media significantly above the background level. Further some portion of the release must be attributable to the site. Use the criteria in Table 2-3 as the standard for determining analytical significance.

In addition, the HRS requires that both background and release samples be of the same type. HRS Section 4.1.2.1.1, *Observed Release*, states:

> Limit comparisons to similar types of samples and background concentrations—for example, compare surface water samples to surface water background concentrations.

Thus, because the release samples are surface water sediment samples from the marsh it would be inappropriate to compare them to background soil samples from the source.

Regarding the allegedly unreported analytical results for sample X219, contrary to LCCG's claims, the inorganic results for this sample were, in fact, reported in Table 3, *Key Inorganic Sediment Sample Results*, of Reference 39 of the HRS documentation record at proposal. Results reported for other fractions of this sample (e.g., organic substances) do not show significant concentrations of contaminants (and were reported in Reference 38, *Analytical Sample Results from the Addendum to the Expanded Site Inspection for the Lake Calumet Cluster Site, January 26, 2005*, of the HRS documentation record at proposal). That the analytical results for the organic contaminants in sample X219 did not meet observed release criteria

and were not used in HRS scoring of this site has no bearing on the evaluation of any HRS assigned factor value or the site listing decision, because hazardous substances found in other samples collected from the source at the site were sufficient to characterize it.

3.8.2.3.2 Other Sources of Release

Comment: While acknowledging that it recognizes a possible "*de minimis*" contribution from storm water flow at the PPE could potentially be associated with the Lake Calumet site, LCCG commented that the "overriding" source of this flow appears to be the Paxton I or possibly the Paxton II landfill, currently being addressed by IEPA. It submitted a figure purportedly showing that the PPE is "located at the 70-acre Paxton I Landfill site." LCCG concluded that there are no data presented in the HRS documentation record to show that these landfills are not significant contributing sources of releases in the marsh and that, "it is pure speculation that such a release is caused by the [Lake Calumet Cluster site]."

LCCG also identified numerous possible anthropogenic non-point sources of the PAHs in Indian Ridge Marsh, including motor vehicle emissions and atmospheric deposition from coal- and oil-burning power plants and other industrial sources. It commented, however, that it may not be necessary to speculate on such sources. It claimed that the PPE "is located about 1,500 feet from the southeastern limit (and generally downstream) of a 70-acre coal pile associated with the Acme Coke site." It commented that elevated PAH levels are associated with coke-making wastes and runoff from coal storage piles. As with the Paxton Landfill sources, LCCG concluded that there are no data presented in the HRS documentation record to show that the coal pile is not a significant source of storm water flow to the PPE.

Response: The Lake Calumet area, historically, has been heavily industrialized. However, as discussed in this support document, the release being evaluated in the Lake Calumet Cluster HRS evaluation has met the criteria for an observed release at least in part attributable to the Lake Calumet Cluster site. The HRS documentation record makes no claim that the Lake Calumet Cluster site at proposal is the only source of the contamination, or even that it is the primary source, nor does the HRS itself require as much. Instead, HRS Sections 2.3 and 4.1.2.1.1 require only that "some portion" of the release be attributable to the site. Furthermore, even if the contamination in the site source came originally from other adjacent source areas, this does not alter the finding that the contamination in the Indian Ridge Marsh is attributable in part to contaminant migration from the site source. At the time of sampling, two culverts through which surface water may drain from the site source to the marsh were documented. The two culverts are approximately 8 inches in diameter and all are located slightly north of the Lake Calumet Cluster source. Together, they are the drainage route from the west side of the railroad right of way (including the LCC source) to the Indian Ridge Marsh. Hence, overland flow from the Lake Calumet Cluster source is still draining east from the source at this site to the ditch along the edge of the railroad right-of-way and through the culverts to Indian Ridge Marsh. If during further investigation other sources are found to be contributing to the contamination found at Source 1, they will be addressed appropriately.

As noted on page 19 of the HRS documentation record at proposal, the proposed site is part of a much larger area containing additional potential sources of contamination to Indian Ridge Marsh and other surface water bodies in the area. The existence of these other sources, or the possibility that they have contributed to the release in the past, however, does not preclude attributing the release in the marsh in part to the Lake Calumet Cluster site.

As discussed previously in this support document and presented in the HRS documentation record, EPA has ample reason to believe that at least some portion of the release can be attributed to the LCC site. Pages 15-18 of the HRS documentation record at proposal show that soils in the site source contain highly elevated concentrations of numerous contaminants when compared to background soil samples. As noted above and as documented in the *Addendum to the Expanded Site Investigation of the Lake Calumet Cluster*

Site (Reference 39 of the HRS documentation record at proposal), during a precipitation event that occurred during the site visit, surface water was in direct contact with these soils, covered much of the site, and was observed to flow toward the ditch on the eastern boundary of the site and north to the culverts releasing to Indian Ridge Marsh. The HRS documentation record at proposal also notes on page 17 that the source area has been flooded at a time that a hazardous substance was present in the source, and material containing a hazardous substance was in direct contact with surface water. The comments above do not call these conclusions into question.

Furthermore, the existence of additional potential sources of contamination that could be the origin of the contamination in the site source has no bearing on the HRS evaluation of the Lake Calumet Cluster site. As discussed in section 3.4 of this support document, the identification of parties potentially liable for the cleanup of a site is not a factor considered in HRS scoring or NPL listing, and occurs in a separate stage of the Superfund process.

Surface runoff from the Paxton I and Paxton II landfills currently proceeds around the landfill (east to north to west via drainage ditches) and ultimately discharges through a culvert under Stony Island Road to Lake Calumet. While past surface runoff may have migrated to the site source area, as discussed above, this possibility does not affect the attribution of at least part of the release to the LCCS.

Regarding the coal pile located 1500 feet north of the PPE, it should be noted that page 8 of Reference 6[8] to the HRS documentation record at proposal states specifically that "[t]here does not appear to be any overland flow from the adjacent [Acme] coke plant into the north pool [i.e., north area of Indian Ridge Marsh]" The commenter provided no information or data to EPA in support its suggestion that the coal pile is a source of the release found in the marsh, such as evidence of a lack of containment or evidence of a release from the coal pile. Moreover, EPA has found several PAHs including benzo(a)pyrene, benzo(a)anthracene, chrysene, fluoranthene, phenanthrene, among others, in the LCC source, and the soils of the source, as discussed above, have been observed to be in contact with storm water that subsequently discharges into Indian Ridge Marsh. Further, even if the Acme plant drained to Indian Ridge Marsh prior to sampling assessments for the LCCS, the documentation of the surface water overland flow from the LCC source to the Indian Ridge Marsh shows attribution of at least part of the release to the LCCS. Therefore, EPA has no reason to consider that the coal pile is the cause of all contamination in the Indian Ridge Marsh. Accordingly, these comments do not contradict EPA's attribution of at least part of the release to the LCCS.

3.9 Waste Characteristics: Bioaccumulation

Comment: LCCG commented that site-specific information demonstrates that the assumed PAH uptake in the aquatic food chain is not occurring. It argued that EPA's own site-specific risk assessment concluded that no PAHs were found in fish or crayfish tissue samples and that PAHs associated with the site "are not accumulating in higher trophic levels in the aquatic food chain." It also claimed that aquatic food chain was a "key basis" of the environmental threat identified in the HRS documentation record. LCCG commented that human health and ecological risk assessments that have been conducted were "apparently not consulted" during the preparation of the HRS documentation record.

Response: The HRS model itself takes into account the bioaccumulation potential of hazardous substances according to specific directions contained in the regulation, and does not consider site-specific estimates of

[8] *An Assessment of the Hydrology and Water Quality of Indian Ridge Marsh and the Potential Effects of Wetland Rehabilitation on the Diversity of Wetland Plant Communities*, Illinois State Water Survey, December 1999.

bioaccumulation potential generated outside of the HRS. As discussed below, the HRS directs a bioaccumulation potential factor value to be assigned based on the properties of the substance and available studies and that this value be used in the evaluation of all sites. EPA notes that this is consistent with the role of the HRS as a measure of relative risk across all sites evaluated.

At this site, the bioaccumulation potential was assigned in accordance with HRS Sections 4.1.3.2.1.3, *Bioaccumulation potential*, and 4.1.4.2.1.3, *Ecosystem bioaccumulation potential*.

At the Lake Calumet Cluster site, the bioaccumulation potential for the hazardous substances listed on page 26 of the HRS documentation record at proposal were assigned according to HRS Section 4.1.4.2.1.3, which states:

> Assign an ecosystem bioaccumulation potential factor value to each hazardous substance in the same manner specified for the bioaccumulation potential factor in section 4.1.3.2.1.3, except:
>
> - Use BCF data for all aquatic organisms, not just for aquatic human food chain organisms.
> - Use BCF data that corresponds to the type of water body (that is, fresh water or salt water) in which the sensitive environments (not fisheries) are located.

HRS Section 4.1.3.2.1.3 instructs the scorer to:

> Use the following data hierarchy to assign a bioaccumulation potential factor value to each hazardous substance:
>
> - Bioconcentration factor (BCF) data.
> - Logarithm of the n-octanol-water partition coefficient (log K_{ow}) data.
> - Water solubility data.
>
> Assign a bioaccumulation potential factor value to each hazardous substance from Table 4-15.
>
> If BCF data are available for any aquatic human food chain organism for the substance being evaluated, assign the bioaccumulation potential factor value to the hazardous substance as follows:
>
> - If BCF data are available for both fresh water and salt water for the hazardous substance, use the BCF data that correspond to the type of water body (that is, fresh water or salt water) in which the fisheries are located to assign the bioaccumulation potential factor value to the hazardous substance.
>
> - If, however, some of the fisheries being evaluated are in fresh water and some are in salt water, or if any are in brackish water, use the BCF data that yield the higher factor value to assign the bioaccumulation potential factor value to the hazardous substance.
>
> - If BCF data are available for either fresh water or salt water, but not for both, use the available BCF data to assign the bioaccumulation potential factor value to the hazardous substance.

> If BCF data are not available for the hazardous substance, use log K_{ow} data to assign a bioaccumulation potential factor value to organic substances, but not to inorganic substances. If BCF data are not available, and if either log K_{ow} data are not available, the log K_{ow} is available but exceeds 6.0, or the substance is an inorganic substance, use water solubility data to assign a bioaccumulation potential factor value.
>
> Do not distinguish between fresh water and salt water in assigning the bioaccumulation potential factor value based on log K_{ow} or water solubility data.
>
> If none of these data are available, assign the hazardous substance a bioaccumulation potential factor value of 0.5.

These provisions of the HRS thus do not call for site-specific bioaccumulation factor values to be developed or instruct that evidence of bioaccumulation otherwise be provided to assign this factor value.

On page 26 of the HRS documentation record at proposal, section 4.1.4.2.1 presents the bioaccumulation factor values for each of the hazardous substances found in the observed release in Indian Ridge Marsh sediments, including benzo(a)pyrene and other PAHs, and provides the citation to the source of the assigned values. Indian Ridge Marsh is a freshwater wetland and is a habitat for several sensitive environments (see pages 26, 29, and 30 of the HRS documentation record at proposal).

The footnote from the table on page 26 of the HRS documentation record at proposal states that fresh water BCF and bioaccumulation potential factor values were used in scoring.

For example, the ecosystem bioaccumulation potential factor value for fresh water for benzo(a)pyrene and other PAHs listed were assigned using bioaccumulation data obtained from the EPA ECOTOX database (http://cfpub.epa.gov/ecotox/).[9] The value for benzo(a)pyrene is listed as 2.9 E+5. The Bioaccumulation Potential Factor Value for each contaminant was then assigned from HRS Table 4-15 based on its BCF. Accordingly, the bioaccumulation factor value for freshwater listed in section 4.1.4.2.1 of the HRS documentation record for benzo(a)pyrene was 50,000. Thus, the requirements of the HRS for assigning the bioaccumulation potential factor values were satisfied.

These comments have no bearing on the HRS evaluation at proposal or the listing decision.

[9] Reference 2 of the Lake Calumet Cluster HRS documentation record at proposal is excerpted from the Superfund Chemical Data Matrix (SCDM) (USEPA, January 2004). SCDM contains chemical and physical properties, toxicological data, bioaccumulation data, and the HRS assigned factor values and benchmarks for hazardous substances used to evaluate NPL sites using the HRS. A complete copy of SCDM can be obtained at: http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm. The SCDM report for benzo(a)pyrene lists ECOTOX as the reference for the freshwater environmental BCF data. The ECOTOX database lists a BCF value of 2.9 E+5 for benzo(a)pyrene based on a study of zebra mussels (Bruner, et. al. 1994. *The Role of the Zebra Mussel, Dreissena polymorpha, in Contaminant Cycling: I. The Effect of Body Size and Lipid Content on the Bioconcentration of.* J. Gt. Lakes Res. 20(4):725-734). (See http://cfpub.epa.gov/ecotox/).

4.0 Conclusion

The original HRS score for this site was 30.00. Based on the above response to comments, the score remains unchanged. The final scores for the Lake Calumet Cluster site are:

Ground Water:	Not Scored
Surface Water:	60.00
Soil Exposure:	Not Scored
Air:	Not Scored
HRS Site Score:	30.00

Attachment 1

Area Map from the HRS documentation record at proposal; Figures 1, 2 and 3 and an overland flow map from Reference 39 of the HRS documentation record at proposal.

Area Map

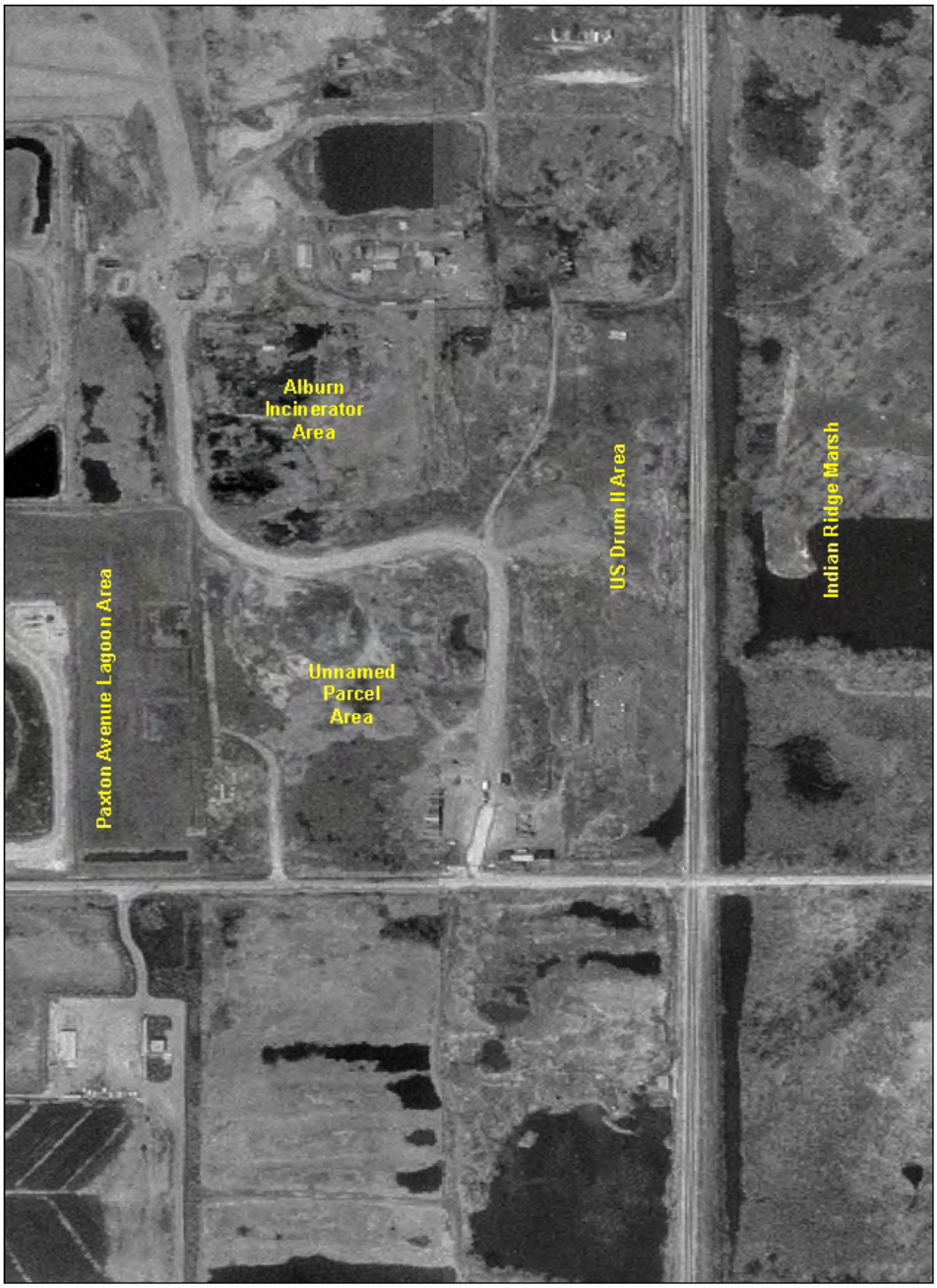

Alburn
Incinerator
Area
US Drum II Area
Indian Ridge Marsh
Paxton Avenue Lagoon Area
Unnamed
Parcel
Area
N
0
0.05
0.1
0.2
0.3
0.4
Miles

Figure 1
Site Location Map

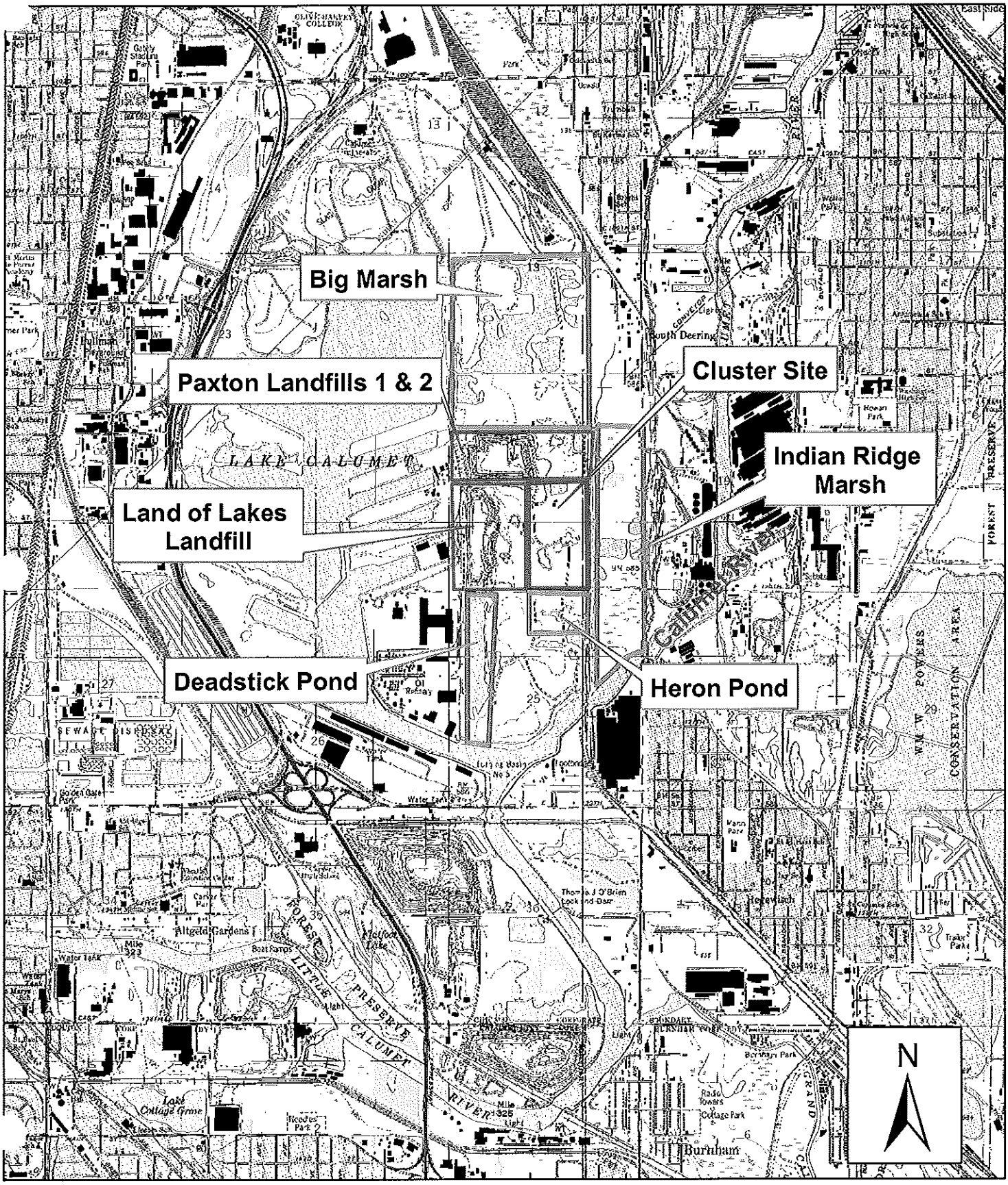
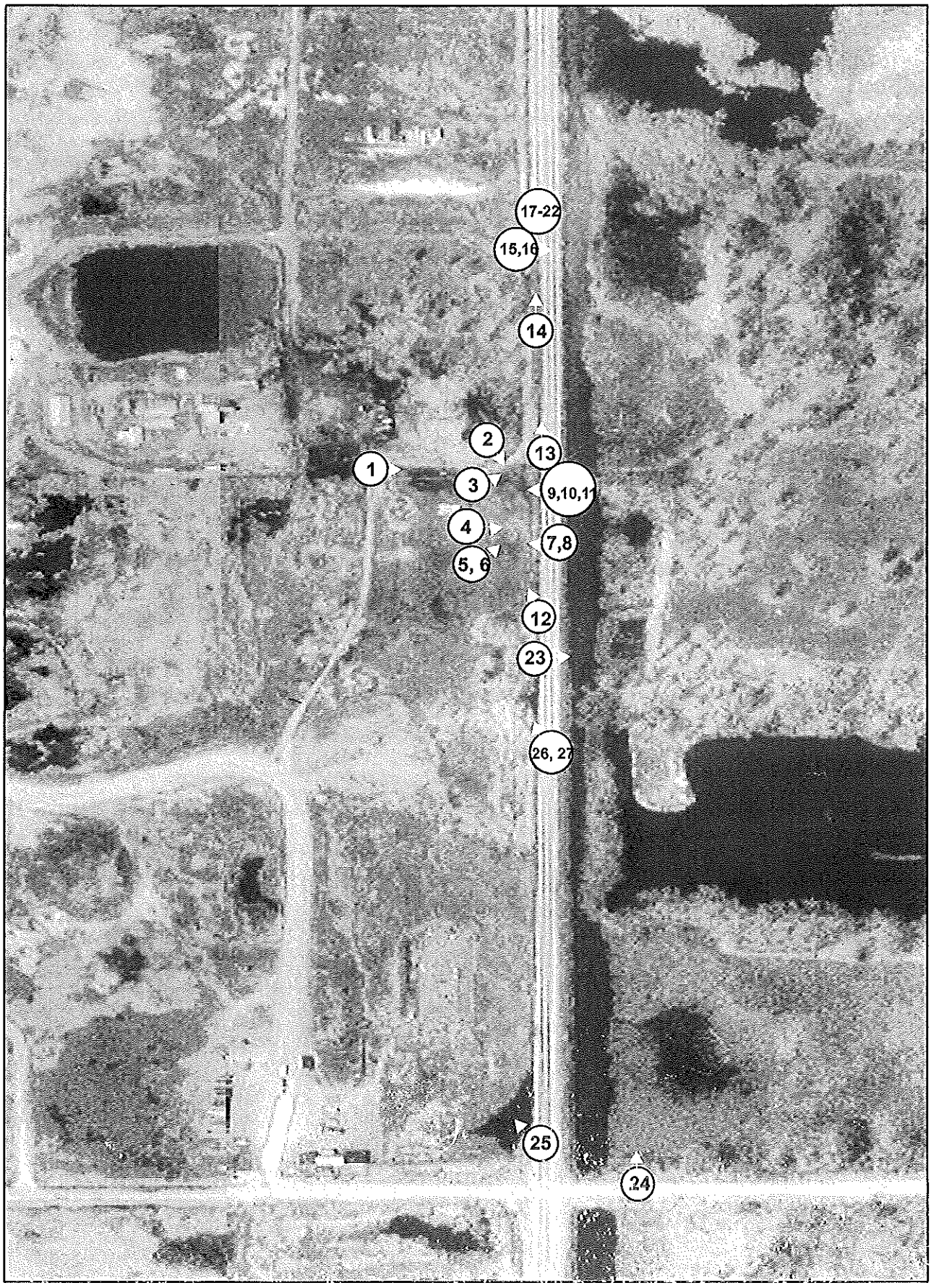


Figure 2
Soil Sample Locations

Figure 3
Sediment Sample Locations

Overland Flow Photographs



0 265 530 1,060 1,590 2,120 Feet

N